Unit of Action and Future Combat Systems — An Overview

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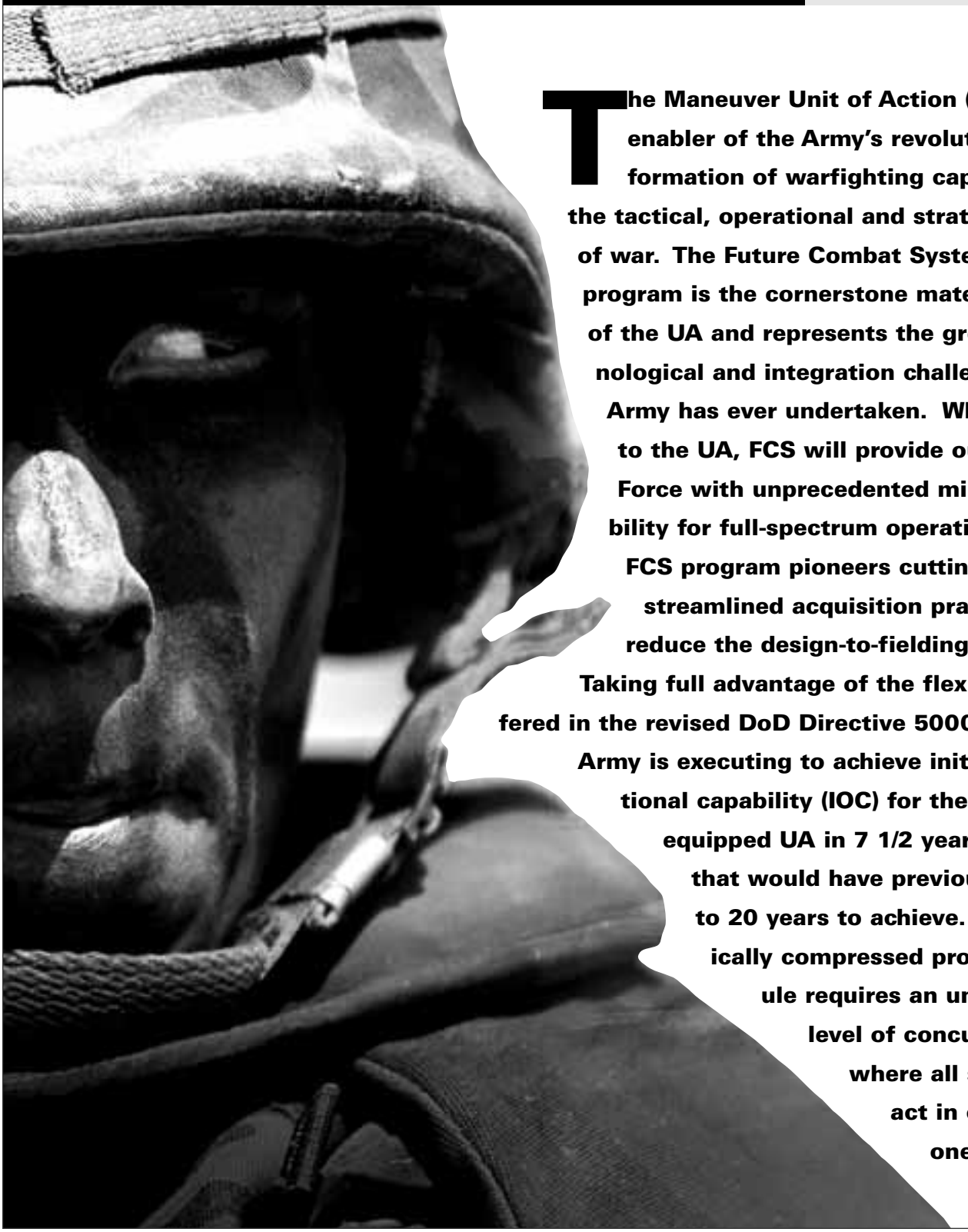
FUTURE COMBAT SYSTEMS
FCS
One Team-The Army/Defense/Industry



The Maneuver Unit of Action (UA) is a key enabler of the Army's revolutionary transformation of warfighting capabilities at the tactical, operational and strategic levels of war. The Future Combat Systems (FCS) program is the cornerstone materiel element of the UA and represents the greatest technological and integration challenge the Army has ever undertaken. When fielded to the UA, FCS will provide our Future Force with unprecedented military capability for full-spectrum operations. The FCS program pioneers cutting-edge and streamlined acquisition practices that reduce the design-to-fielding cycle time. Taking full advantage of the flexibility offered in the revised DoD Directive 5000 series, the Army is executing to achieve initial operational capability (IOC) for the first FCS-equipped UA in 7 1/2 years, a task that would have previously taken 15 to 20 years to achieve. The dramatically compressed program schedule requires an unprecedented level of concurrency where all stakeholders act in concert as one team.

Background

The final decade of the 20th century saw the decisive victory of the U.S.-led coalition forces over the Iraqi army in the desert of Kuwait and Iraq. To many, this indicated that the weapons, doctrine and training of the U.S. Army were among the best in the world and that no foe could militarily challenge this Nation. The popular view was that there would be little need for a change in the U.S. Armed Forces for years to come because our victory was so decisive and complete.

However, the Army did not rest on its laurels. It understood after *Operation Desert Storm (ODS)* that the world was changing and so too were our adversaries. Through studies and analyses such as the Army After Next Study initiated after *ODS*, the Army understood that at one end of the spectrum, creative and adaptive opponents could be expected to employ strategies to destroy U.S. resolve by attacking our homeland, killing innocent civilians and conducting prolonged urban or guerilla operations. Some would immerse themselves in our culture, exploit our vulnerabilities and seek to create maximum fear in the hearts of our citizens and coalition partners as witnessed by the infamous attacks on 9/11. Studies predicted that our future adversaries would also seek to fracture confidence in public institutions, generate economic uncertainty and divide the focus as well as the will of the general public.

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Respecting the superior power of U.S. military forces, some of our future adversaries would employ asymmetric options to avoid U.S. strengths and exploit U.S. vulnerabilities. This is evident today in Iraq where the enemy has significantly changed from the one defeated only a decade ago during *ODS* and again last year.

So, the Army was cognizant after *ODS* that while the *nature* of war remains constant, the *conduct* of war is continually undergoing change in response to new concepts, technologies and capabilities. How our Army was to adapt to such changes would determine our readiness to confront future operational challenges and threats. The Army studied future war and the results of Force XXI, Army After Next and other key studies and analyses, and informed the then incoming Army Chief of Staff (CSA), GEN Eric K. Shinseki, of the results. In October 1999, under the CSA's leadership, the Army published The Army Vision that prescribed the key tenets for transforming the Army into a force that is *strategically responsive and dominant at every point on the spectrum of conflict*, not solely major contingency operations like *ODS*.

Subsequently, the U.S. Army Training and Doctrine Command (TRADOC), as the Army's "architect of the future" and a partner with the Army's materiel development community, developed detailed warfighting concepts and doctrine, organizations, training, materiel, leadership, personnel and facilities requirements that would help achieve the Army Vision for the Army's Future Force. Two of the key foundational products to emerge from this work included: the Maneuver UA Operational and Organizational (O&O) Plan and the FCS Operational Requirements Document (ORD). Together they have become foundational blueprints for setting the Army on the path to making the Future Force a reality.

Maneuver UA

An increasingly demanding operational environment, coupled with America's future strategic, operational and tactical military art, clearly defined the necessity to build a ground force capable of rapid deployment and operations across the full spectrum of operations. The FCS-equipped UA represents a capability critical to the Army's Future Force and the accomplishment of the goals of the Joint Vision, Army Vision and other applicable policy documents. Although the Future Force's deployability qualities are significant, it is the Future Force's operational maneuver capability to conduct decisive operations that is most relevant to the Joint Force.

The Army's Maneuver UA will be part of a Joint team that is decisive in any operation, against any level threat in any environment. The UA balances the capabilities for strategic responsiveness and battlespace dominance. The UA also balances deployability and sustainability with responsiveness, lethality, survivability, agility and versatility. Although optimized for offensive operations, the UA can execute stability and support operations as well. It employs its revolutionary command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) architecture to expand

or contract its span of control and integrate unit of employment (UE) or joint task force (JTF) supporting capabilities to accomplish missions. The hallmark of UA operations will be the significant abilities to develop situations out of contact, engage the enemy in unexpected ways, maneuver to positions of advantage with speed and agility, engage enemy forces beyond the range of their weapons, destroy enemy forces with enhanced fires and assault at times and places of our choosing.

The UA is designed to ensure campaign quality. Although it has the responsiveness and deployability to achieve all Army deployment goals, it is designed with the durability, endurance and stamina to fight battles and engagements for the duration of a campaign and to aggressively focus on decisive points and centers of gravity. It can also perform tactical and operational maneuver by land, air and sea. Given its inherent tactical mobility, it can land at points removed from its objectives, out of range of enemy defenses, then move by land to complete its mission. This capability applies not only to entry operations, but also to theater operations throughout the campaign.

The UA will master the transitions in warfare that sap operational momentum and threaten initiative retention. Situational awareness (SA) delivers the advantage required to close with and destroy the adaptive and asymmetric adversaries of the future and allows the commander to set the requisite conditions for mission success. Most importantly, the UA is based on capable, lethal small units. At every echelon, the UA forces dominate their combat environments during entry operations, movement to the fight, decisive operations and transition. Commanders, who are expert in using terrain and knowing the enemy, and who also have the instincts to "feel" the battle, will lead this force. The UA is not a fixed organization. It has the capability to command and control up to six combined arms battalions. It is also able to employ a range of supporting capabilities from a UE or JTF to perform a variety of missions including reinforcing fires, engineers, military police, air/missile defense, psychological and civil military operations. The UA can be tailored with additional capabilities for specific missions and between missions in the campaign. The forward support battalion can likewise be tailored with additional sustainment capabilities when required to support UA augmentation.

The UA fosters the ability of Soldiers and leaders to achieve lethality and survivability overmatch. It presupposes platform superiority and emphasizes combined arms teams to achieve combat power synergy. The Soldier is the centerpiece of the Future Force.

The Maneuver UA is not just a unique brigade combat team, built around a family-of-systems, but a new concept for fighting those systems. It is optimized to develop the situation out of contact, throwing the enemy off balance by destroying its high-payoff systems before forces are joined, and maneuver to a position of advantage. The UA sets the conditions and isolates enemy formations to enable it to close with and destroy the enemy at a time and place of its choosing. During contact, the UA continues to develop the situation by integrating intelligence, surveillance, reconnaissance, fires and maneuver. The UA finishes engagements decisively with precision assaulting fires supporting mounted or dismounted assault.

The UA is a "network-enabled" force. It is equipped with a vast sensor array that permits leaders and commanders to achieve dramatic improvements in SA. This significantly improved ability to collect and process information by using organic sensors, as well as rapid access to information from UE and higher, will ensure commanders possess the timely, accurate intelligence necessary to achieve decision superiority. Decision superiority will permit the UA to maneuver forces and destroy enemy systems throughout its area of influence.

Also built into the organization is the ability to employ lethality from external sources. Structurally and through the network, sensor-shooter relationships begin at the Soldier level and exist throughout the formation, providing the UA the ability to accurately direct effects internally or from supporting UE forces and joint assets. This ability to cooperatively engage targets with tactical, operational and strategic-level assets will be accomplished in seconds rather than minutes. The UA fosters the ability of Soldiers and leaders to achieve lethality and survivability overmatch. It presupposes platform superiority and emphasizes combined arms teams to achieve combat power synergy. The Soldier is the centerpiece of the Future Force.

FCS Program

FCS is comprised of a family of advanced, networked air- and ground-based maneuver, maneuver support and sustainment systems that will include manned and unmanned (MUM) platforms. FCS is networked via a

C4ISR architecture including networked communications, network operations, sensors, battle command system, training and MUM reconnaissance and surveillance capabilities that will enable SA levels and synchronized operations heretofore unachievable.

FCS will operate as a system-of-systems (SoS), as defined in *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01B*, that will network existing systems, systems already under development and new systems to be developed to meet future UA needs. The network will enable improved ISR, enhanced analytical tools, joint exchange of blue and red force tracking down to the tactical level, battle command, real-time sensor-shooter linkages and increased synergy between echelons and within small units. It will also enable the UA to connect to UE and Joint, Interagency and Multinational capabilities, making these capabilities available to the UA's small units as well as with adjacent, noncontiguous units. FCS enables the networked UA to develop the situation in and out of contact, set conditions, maneuver to positions of advantage and to close with and destroy the enemy through standoff attack and combat assault per the Maneuver UA O&O Plan, as outlined in the FCS ORD (April 14, 2003, Page 10).

Unlike other acquisition programs that focus primarily on one system or vehicle platform, the FCS program focus is on systems integration, C4ISR networks, logistics and training to ensure operational requirements — such as lethality and survivability — are achieved. C4ISR networks must provide commanders and their supporting staffs the ability to see first, understand first, act first and finish decisively. An integrated C4ISR network empowers leaders with access to external information, combined with information from organic sources that can be distributed rapidly to small units for greater operational effectiveness. In the UA, relevant information raises combat power exponentially and becomes actionable knowledge for the commander as expressed in the following formula: Combat Power=((Maneuver+Firepower+Protection)+(Leadership)) Information

FCS will enable the UA to achieve SA through direct collection and integration of intelligence, instead of waiting for it to be filtered down through upper echelons. Data will be collected from Joint and national intelligence assets and from organic sources as well. The UA C4ISR technologies will integrate the data collected locally with its own advanced onboard ground and MUM aerial sensors as well as data from external sources, allowing commanders the best possible SA. This awareness does not just extend to enemy/ friendly positions and terrain, but to weather, local languages and customs. The UA will be uniquely equipped with a wide array of sensor-carrying platforms, particularly unmanned ground and aerial vehicles that are organic down to the squad, neatly integrated in the FCS SoS, allowing units at all levels to have superior battlespace vision.

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Every platform and Soldier will have the ability to both see the battlefield as their commanders do and possess the capability to direct fires from any shooter available to the UA. Each platform will have the ability to take advantage of every sensor available to literally see around corners and achieve direct fires from "beyond line of sight." This makes every contact by the UA potentially a lethal one. Latency from contact to fire mission will be drastically reduced.

FCS ground platforms will also be highly mobile and survivable. Mobility will be enhanced through advanced technologies that increase speed and reliability while keeping weight down. SA will decrease the platforms' encounters with obstacles, and sensors will provide standoff mine detection. Active and passive survivability technologies will protect the vehicles and their crews and provide valuable threat information to the UA C4ISR network, pinpointing enemy shooters and allowing them to be targeted.

FCS Acquisition Approach

The FCS program employs an evolutionary acquisition strategy consisting of a series of increments leading to FCS objective capability. This new approach mitigates the risk associated with the FCS's compressed and challenging program schedule and scope. Succeeding increments of FCS capabilities will have a structure similar to Increment I. Technology insertion to the FCS/UA will continue throughout each increment as high-payoff technologies mature and are ready for integration.

Incremental development of FCS SoS allows the Army to field capabilities to warfighters faster by producing and deploying systems as their technologies

mature. When initially fielded, the first increment of FCS capability will meet many, but not all, SoS-desired objective capabilities. However, sufficient FCS capabilities will be met with Increment I to enable the UA to effectively execute its O&O Plan at full operational capability (FOC). Subsequent increments will incorporate new technologies that have matured since the previous increment of capability was fielded to the UA and will further enhance the UA's ability to execute missions as articulated in the UA O&O Plan. The series of increments leads to full objective FCS capability and ensures that the UA can execute its O&O Plan over time to dominate ground combat at any time and any place.

The FCS-equipped UA is being developed by clearly and unambiguously empowering the network SoS integration activities as the cornerstones upon which the FCS program is built. The day-to-day mindset of these integration activities involves thinking through tasks hierarchically (top-to-bottom) and temporally (today to FOC in 2012), with a special emphasis on near-term activities focused on allocation of requirements to baselines, and then to product build, verification, deployment and support at the SoS level. Multidisciplinary integrated product teams and working groups address the diverse interconnections that exist in complex SoS.

The FCS program also uses an advanced collaborative environment to facilitate collaborative development between PM FCS, Lead Systems Integrator (LSI) and TRADOC, and uses other initiatives to address program risk and to refine solutions to meet user requirements in the FCS ORD and consistent with the UA O&O Plan.

To obtain the best value for the Army, PM FCS is using the LSI as the single accountable, responsible contractor to integrate the FCS on time and within budget, while reducing the logistics footprint and achieving user requirements. The LSI acts on the Army's behalf throughout the FCS program's life to optimize FCS capability, maximize competition, ensure interoperability and maintain commonality while also reducing life-cycle cost. Army leaders have made risk management a program cornerstone, implementing risk management tools at all program levels. Program risks are identified and mitigation plans developed with a special emphasis on technology maturity.

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The FCS program is vital to UA development and fielding and is the Army's top materiel development program that will provide unprecedented military capability for the Future Force. FCS development is a collaborative effort between PM FCS, LSI, TRADOC, Defense Advanced Research Projects Agency, other Army stakeholders, sister services, U.S. Joint Forces Command, the Joint Staff, Office of the Secretary of Defense, and other DOD agencies requiring active involvement from industry. The Army will lead overall program management and development efforts while using the LSI to manage SoS integration efforts. The Army is executing an aggressive and compressed schedule to develop, test and field an IOC by 2010. Success will require the application of sound SoS architecture engineering and integration, and software engineering processes, proactive risk management, stable requirements and an appropriate level of oversight to maintain the program schedule and established cost goals. The "One-Team" approach is the linchpin for program management success and fielding the FCS to the Future Force.

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